

DEC 2000 Model 500 AXP

User Information

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This manual describes how to operate the DEC 2000 Model 500 AXP system.

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Preface

Purpose of This Manual	This manual describes how to operate the DEC™ 2000 Model 500 AXP™ system . It contains information on software storage devices, connecting the system to a network , and connecting hardware options to the system.
Audience	This manual is intended for anyone using the system. It is written for both experienced and inexperienced users.
Structure of This Manual	<p>This manual is divided into seven chapters, an appendix, a glossary, and an index:</p> <ul style="list-style-type: none">• Chapter 1 describes the system unit and its internal options.• Chapter 2 describes how to choose a location for the system, move it, turn it on or off, how to boot the operating system, and how to access the removable media devices.• Chapter 3 describes how to use the intelligent front panel (IFP).• Chapter 4 describes how to use compact disc read-only memory (CD-ROM) and diskette drive software storage devices.• Chapter 5 describes how to use tape drive software storage devices.• Chapter 6 describes how to care for the media associated with the removable media devices.• Chapter 7 describes how to connect external peripherals or SCSI devices to the system. It also describes how to connect the system to a network.

- Appendix A gives the list of associated and related documents.
- The glossary defines some of the technical terms used in this manual.

Additional Information Conventions

See Appendix A for the list of associated and related documents.

The following conventions are used in this manual:

Convention	Description
monospace	Text displayed on the screen is shown in monospace type.
boldface type	Boldface type in examples indicates user input. Boldface type in text indicates the first instance of terms defined either in the text, in the glossary, or both.
<i>italic type</i>	Italic type emphasizes important information, indicates variables, and indicates complete titles of manuals.
<i>nn nnn . nnn nn</i>	A space character separates digits in numerals with 5 or more digits. For example, <i>10 000</i> equals <i>ten thousand</i> .
<i>n . nn</i>	A period in numerals signals the decimal point indicator. For example, <i>1.75</i> equals <i>one and three-fourths</i> .
UPPERCASE	Words in uppercase indicate a command.
<i>n</i>	A lowercase italic <i>n</i> indicates the generic use of a number. For example, <i>19nn</i> indicates a 4-digit number in which the last 2 digits are unknown.
<i>x</i>	A lowercase italic <i>x</i> indicates the generic use of a letter. For example, <i>xxx</i> indicates any combination of three alphabetic characters.
Note	A note contains information of special importance to the reader.
Caution	A caution contains information to prevent damage to the equipment.

1

System Description

Introduction

The DEC 2000 Model 500 AXP system is a high-performance **server** system with an architecture designed to run a variety of operating systems. This chapter describes the system.

In This Chapter

This chapter contains the following sections:

- Operating System Support
- Visual Display Unit Support
- System Features
- Front Panel Controls and Indicators
- Back Panel Ports and Connectors
- Back Panel Controls and Indicators
- Internal Storage Options
- EISA and ISA Options
- Memory Options
- Power Supply Options

Operating System Support

Summary This section describes how the DEC 2000 Model 500 AXP system can support different operating systems.

System Architecture The system uses the Digital Equipment Corporation **DECchip 21064**[™] reduced instruction set computer (**RISC**) microprocessor. Based on the Digital[™] Alpha AXP[™] architecture, it provides all the power of a **64-bit** computing environment. In addition, the Alpha AXP architecture privileged architecture library code (**PALcode**) allows the system to use different operating systems.

Supported Operating Systems The following table lists the operating systems supported by the system:

Operating System	Short Name
Microsoft® Windows NT Advanced Server [™] for AXP Systems	Windows NT [™]
OpenVMS [™] AXP Operating System	OpenVMS
DEC OSF/1 [®] AXP Operating System	OSF/1

Visual Display Unit Support

Summary This section describes the visual display units (VDUs) that you can use with the system.

VDU Support Depending on the operating system installed, the system can use either a VT-series terminal or a PC-standard monitor as a VDU. The following table lists whether the VDUs support either the firmware or operating system for each operating system:

Operating System	Monitor	Terminal
Windows NT	Firmware and operating system	Firmware
OpenVMS	Firmware and operating system	Firmware and operating system
OSF/1	Firmware and operating system	Firmware and operating system

Connecting Terminals to the System See Chapter 7 for information on connecting terminals to the system.

Note

You must set the terminal to 8 bits—no parity, when using it to display the Windows NT firmware. See Chapter 7 for the other required terminal settings.

System Features

Summary This section describes the features provided by the system.

Features The following table lists the features of the system:

Feature	Description
64-bit Alpha AXP RISC architecture	The 64-bit architecture provides significant performance advantages over 32-bit architectures, especially in the areas of memory and cache bandwidth .
Flexible memory architecture	You can upgrade the system memory from 16 megabytes (M bytes) to 128M bytes using memory options (see the section entitled Internal Storage Options).
Six EISA expansion slots	The extended industry standard architecture (EISA) slots allow you to include up to six industry standard architecture (ISA) or EISA option boards. Standard option boards included with the system provide the following features: <ul style="list-style-type: none">• Super video graphics array (SVGA) video adapter• ThinWire™ and 10BASE-T Ethernet connection capabilities• Small computer system interface (SCSI) storage device connection capabilities Other option boards provide different capabilities (see the section entitled Internal Storage Options).

Feature	Description
Factory installed software (FIS)	The system disk , if installed, contains the operating system that you ordered. FIS software saves you time when installing the system, because you can boot the operating system directly from the system disk, without having to spend time installing it.
Space for up to 14 internal devices	Depending on the configuration, the system supports up to 13 internal SCSI devices, including disk drives, compact disc read-only memory (CD-ROM) drives, and tape drives (see the section entitled Internal Storage Options). A PC/AT-standard interface RX™26 diskette drive is a standard device shipped with all systems. See Chapter 7 for more information on internal and external SCSI device support.
External ports	The standard system unit provides a serial port and a parallel port to which you can connect peripherals, such as terminals or printers.
Intelligent front panel (IFP)	A programmable intelligent front panel on the front of the system unit allows you to put the system in a standby state, halt it, see the system configuration, set the internal speaker volume, and view IFP error messages and power-up test codes.
Optional standby power supply (SPS)	The system supports an internal SPS that uses batteries to supply power to the system for a short period if the external power source fails.

Front Panel Controls and Indicators

Summary

This section describes the controls and indicators located on the system unit front panel.

Controls and Indicators

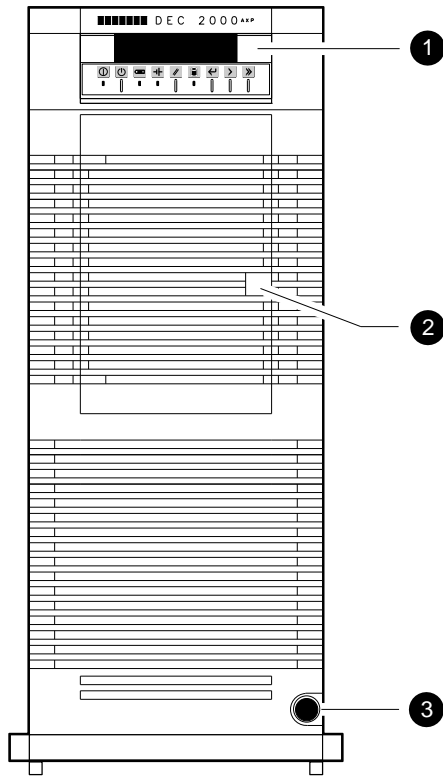
The following table lists the controls and indicators on the front panel of the system unit and describes their function:

Control or Indicator	Function
❶ IFP	Controls and monitors system activities, and displays certain system status messages. See Chapter 3 for more information on using the IFP.
❷ Front door latch	Opens and closes the front door of the system when pushed and released.
❸ On/Off switch	Switches the system unit on or off.

Front Panel Controls and Indicators

Illustration

The following figure shows the location of the controls and indicators on the front panel of the system unit:



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Back Panel Ports and Connectors

Summary

This section describes the ports and connectors located on the system unit back panel.

Ports and Connectors

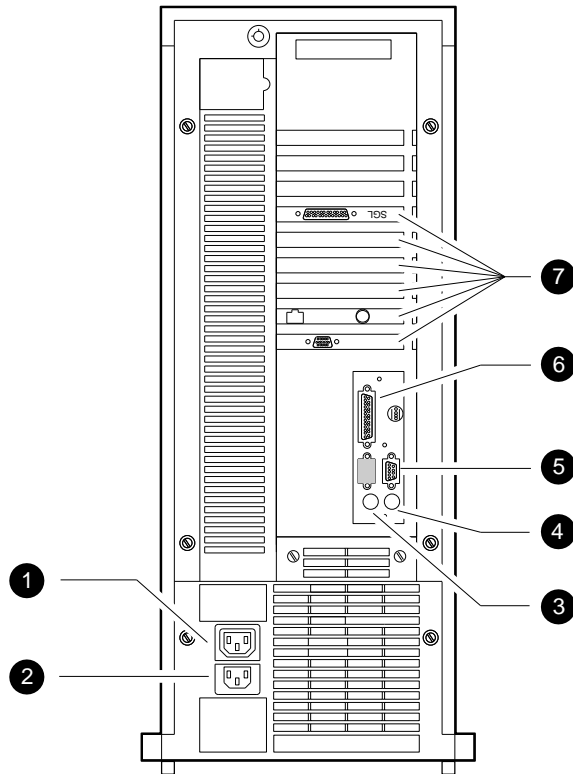
The following table lists the ports and connectors on the back panel of the system unit and describes their function:

Port or Connector	Function
❶ Power output connector	Enables you to supply power to a peripheral device, for example, a terminal or monitor.
❷ Power input connector	Enables you to connect the system unit to a power socket.
❸ Mouse connector	Enables you to connect a PS/2® mouse to the system.
❹ Keyboard connector	Enables you to connect a PS/2 compatible keyboard to the system.
❺ Serial port/terminal port	Enables you to connect a console terminal or serial-line peripheral to the system. A second serial port beside this port is connected internally to the IFP and is not available for external connections.
❻ Parallel port	Enables you to connect a Centronics™-compatible parallel printer or other peripheral to the system.
❼ Six EISA or ISA slots	Depending on the option installed, these slots may contain various ports, connectors, controls, or indicators. See your option documentation for more information.

Back Panel Ports and Connectors

Illustration

The following figure shows the location of the ports and connectors on the back panel of the system unit:



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Back Panel Controls and Indicators

Summary This section describes the controls and indicators located on the system unit back panel.

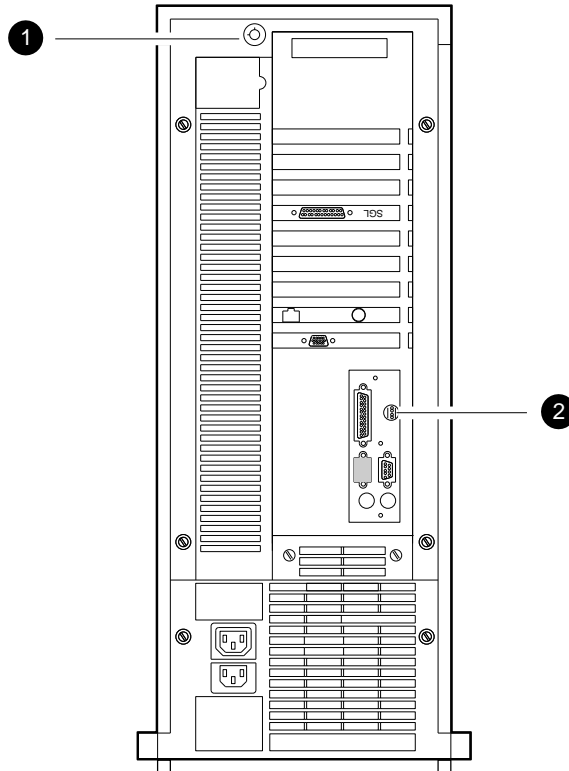
Controls and Indicators The following table lists the controls and indicators on the back panel of the system unit and describes their function:

Control or Indicator	Function
❶ Chassis keylock	Mechanically locks the outside cover to prevent unauthorized access to the system unit internal components
❷ Diagnostic LED display	Four LEDs display the status of the system and facilitate troubleshooting

Back Panel Controls and Indicators

Illustration

The following figure shows the location of the controls and indicators on the back panel of the system unit:



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Internal Storage Options

Summary

This section lists and describes the supported internal storage options. It describes the following types of storage options:

- CD-ROM drives
- Diskette drives
- 3.5-inch disk drives
- Tape drives

Options List

The following table lists the supported internal storage options:

Item	Description	Capacity
❶	RRD42™ 5.25-inch CD-ROM drive	600M-byte CD-ROM
❷	RX26 3.5-inch diskette drive†	Range of diskettes
❸	RZ™24L 3.5-inch disk drive	245M bytes
❹	RZ25 3.5-inch disk drive	426M bytes
❺	RZ25L 3.5-inch disk drive	535M bytes
❻	RZ26 3.5-inch disk drive	1.05 Gigabytes (G bytes)
❼	RZ26L 3.5-inch disk drive	1.05G bytes
❽	RZ28 3.5-inch disk drive	2.10G bytes
❾	TLZ06 5.25-inch tape drive	Range of cassettes
❿	TZK1 <i>n</i> 5.25-inch tape drive	Range of cartridges

†Uses the PC/AT-standard diskette drive interface

Drive Shelves

You install removable media drives using a removable media drive shelf. Each shelf holds a separate drive. You must order a shelf with any removable media drive that you intend installing in the system.

You install disk drives using a disk drive shelf. Each shelf holds two drives. You must order a disk drive shelf if you are installing a disk drive in a system containing an even number of disk drives.

Internal Storage Options

Power Supplies

To support more than a certain maximum SCSI drive configuration, you must order an additional power supply. See the section entitled Power Supply Options for more information on the maximum SCSI drive configuration.

Ordering Information

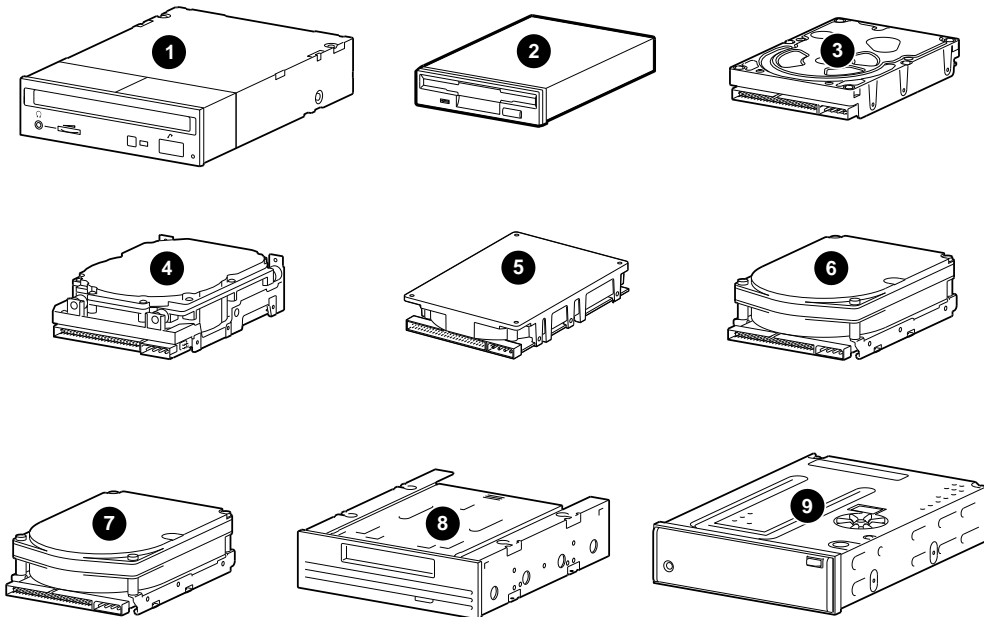
Digital reserves the right to add or remove options from the list of supported options. Contact your Digital sales representative for information on the current list of supported options and for information on ordering these options.

Note

When ordering internal options, it is important that you specify the operating system that you are using. Not all of the options are supported by all the operating systems.

Illustration

The following figure shows the supported internal storage options:



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EISA and ISA Options

Summary

Digital supports a variety of EISA and ISA option boards, including the following types of options:

- SCSI options
- Video options
- Networking options
- Communications options
- Other options

Ordering Information

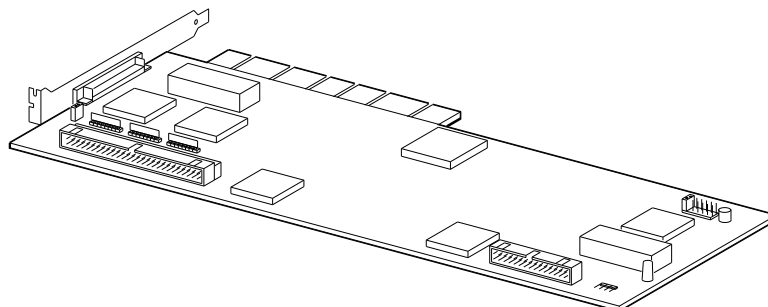
Digital reserves the right to add or remove options from the list of supported options. Contact your Digital sales representative for information on the current list of supported options and for information on ordering these options.

Note

When ordering internal options, it is important that you specify the operating system that you are using. Not all of the options are supported by all of the operating systems.

Illustration

The following figure shows a sample EISA option:



GA_EN00292A_93A

Memory Options

Summary

The system currently supports two memory option sizes:

- 16M-byte memory option
- 64M-byte memory option

Using these memory options, you can configure the system memory from 16M-bytes to 128M-bytes.

Note

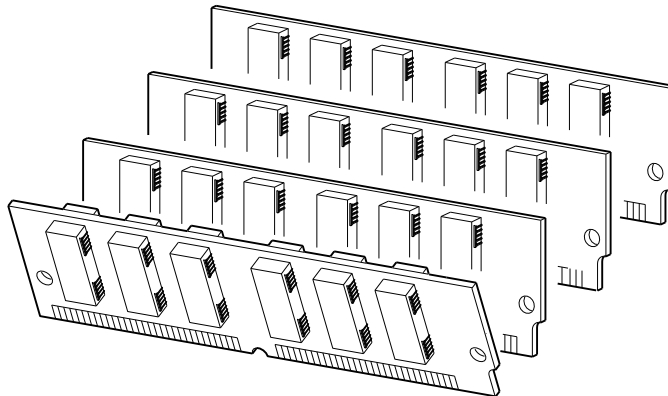
Systems running OpenVMS or OSF/1 require a minimum memory configuration of 32M bytes.

Ordering Information

Digital reserves the right to add or remove memory options from the list of supported memory options. Contact your Digital sales representative for information on the current list of supported memory options and for information on ordering these options.

Illustration

The following figure shows a sample memory option:



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Power Supply Options

Summary

The system supports either one or two power supply modules. The number of power supply modules that the system requires depends on the number of internal storage devices installed. Each power supply provides 415 Watts (W). You require two power supplies to support SCSI configurations containing more devices than the following maximum numbers:

- Eight disk drives and one removable media device
- Six disk drives and two removable media devices
- Four disk drives and three removable media devices

Internal Standby Power Supply

The system supports an internal standby power supply (SPS) that powers the system if it loses alternating current (ac) power. The 460 W SPS consists of an internal controller module and 24 volt (V) battery. It provides power to the system for up to six minutes, depending on the battery charge level.

You cannot install the internal SPS in a system with two power supply modules. When the system contains two power supply modules, you must use an external SPS, if required .

Ordering Information

Contact your Digital sales representative for information on ordering the power supply options and the SPS option.

Note

The power supply modules support either 110 V or 220 V but not both. You must specify the required voltage when ordering a power supply module.

**Safety
Information**

WARNING

The power supply and SPS must be installed and maintained only by qualified Digital service personnel. Do not access or touch the power supply, the SPS, or the cables connected to both. Allow one minute before opening the system unit for the power supply charges to dissipate.

2

Using the System

Introduction

This chapter describes how to position the system unit, turn it on or off, examine the results of the **power-up** tests, and boot the operating system. It also describes how to access the internal removable media devices.

In This Chapter

This chapter contains the following sections:

- Choosing a Location for the System Unit
- Moving the System Unit
- Ergonomic Considerations
- Turning the System On or Off
- Normal Power-Up Process
- Interpreting the Results of the Power-Up Tests
- Booting Windows NT
- Booting OpenVMS
- Booting OSF/1
- Accessing the Removable Media Devices

Choosing a Location for the System Unit

Summary This section describes the locations and conditions that best suit the system unit.

Physical Orientation You must keep the system unit in a vertical position. Wheels on the base of the system unit allow you to move it easily.

Environmental Conditions The following table lists the environmental conditions in which the system unit best operates:

Condition	Explanation
Temperature range	The room temperature must be between 10°C and 35°C (50°F and 95°F.)
Relative humidity	The relative humidity must be between 10 percent and 90 percent.
Air circulation	You must leave a minimum clearance of 3 inches on all sides of the system unit to allow the air to circulate. Fans inside the system unit circulate the air to prevent excessive heat, which can damage the system components.

Choosing a Location for the System Unit

Unsuitable Locations

The following table lists the various locations where you must not operate the system unit:

Location	Explanation
Dirty or dusty locations	Dirt and dust can damage the system components and clog the system unit air vents.
Locations exposed to direct heat or sunlight	Direct heat and sunlight can cause the system unit to overheat and fail.
Unstable locations	The system unit weighs approximately 54.0 kg (118.8 lb) depending on the configuration. If you are not placing the system unit on the floor, make sure that the location is steady and stable and can support the weight.

Cable Considerations

The mouse and keyboard supplied with DEC 2000 Model 500 AXP systems use standard-length cables. However, these cables may be too short for your requirements. If the cables are too short, Digital can supply you with cable extensions for these devices. Contact your Digital sales representative for information on ordering these cable extensions.

Moving the System Unit

Summary This section describes how to move the system unit and secure it in position.

Important Information The system unit is heavy. To avoid injury, get assistance from another person before trying to lift, move, or carry it.

Wheels and Stabilizer Feet The system unit is mounted on four wheels (❶). Two stabilizer feet (❷), located behind the front wheels on either side of the system unit, allow you to secure the system unit in place, preventing it from rolling.

Moving the System Unit To move the system unit, screw the stabilizer feet in a counter-clockwise direction to raise the stabilizer feet from the ground. You can now wheel the system unit to a new location.

Securing the System Unit in Position When you have positioned the system unit in a new location, screw the stabilizer feet in a clockwise direction until the system unit is immobilized.

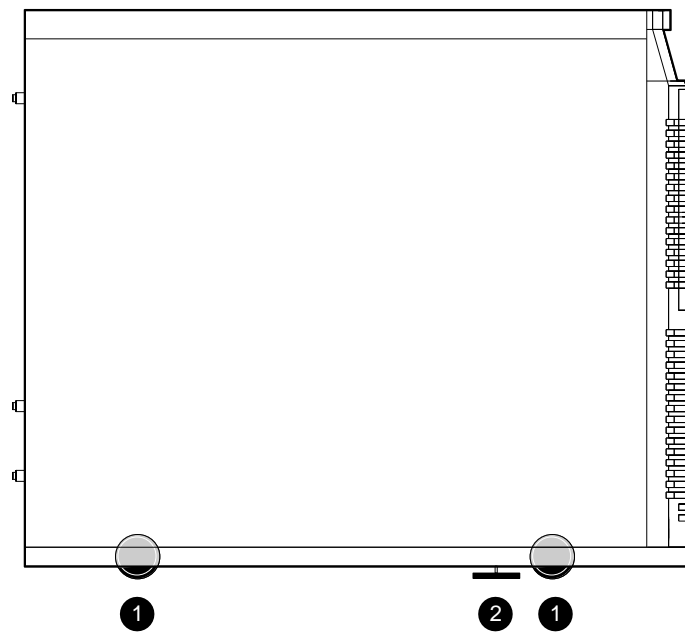
Caution

To prevent damaging the stabilizer feet, do not move the system unit when the stabilizer feet are lowered.

Moving the System Unit

Wheel and Stabilizer Feet Locations

The following figure shows the location of the wheels and stabilizer foot on one side of the system unit:



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Ergonomic Considerations

Summary

This section describes how to adjust your posture and position the components of the system for optimum comfort when you are using it.

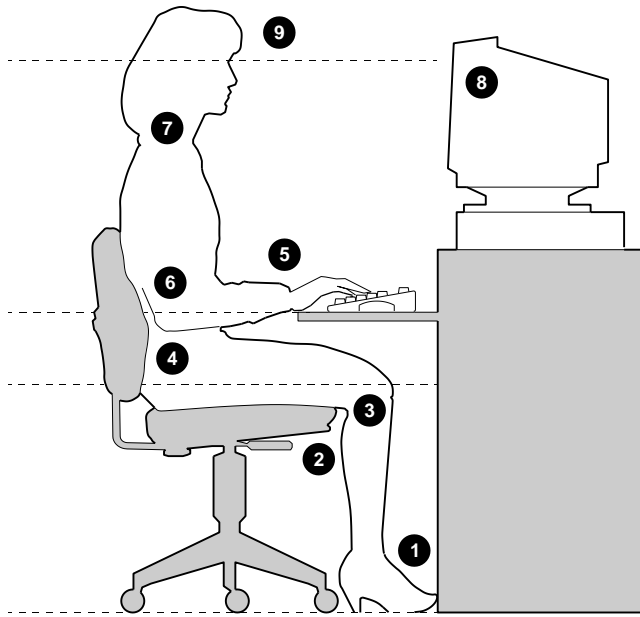
Positioning System Components

The following table explains the optimal positioning for the system components, desk, and chair relative to your posture:

Item	Explanation
Adjust the chair so that	
①	Your feet are flat on the floor—use a foot rest if necessary.
②	Your legs form a right angle at the knee.
③	The backs of your knees are free from the seat pan.
④	You are sitting upright, with support for your lower back.
Adjust the screen and keyboard so that	
⑤	Your wrists are straight and supported. The keyboard, and mouse (if installed) should be at elbow height.
⑥	Your elbows are close to your sides, with your upper arms perpendicular to the floor.
⑦	Your neck is in a neutral posture, with the top of the screen no higher than eye level.
Adjust the lighting and screen so that	
⑧	The light is directed away from the screen to reduce glare. Use the tilt and swivel capabilities of the monitor or terminal to adjust it for your comfort.
⑨	The screen is at the correct distance for your eyesight.

Illustration

The following figure shows the optimal positioning for the system components, desk, and chair relative to your posture:



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Turning the System On or Off

Summary

This section describes how to turn the system on or off without damaging any of the system components.

Turning On the System

The following table lists the steps that you must follow to turn the system on:

Step	Action
1	Set the on/off switch on all peripherals that are connected to the system unit to the on position.
2	Set the on/off switch on the system unit to the on position (1).
3	Check the results of the system power-up tests and boot the operating system. See the following sections for more information.

Turning Off the System

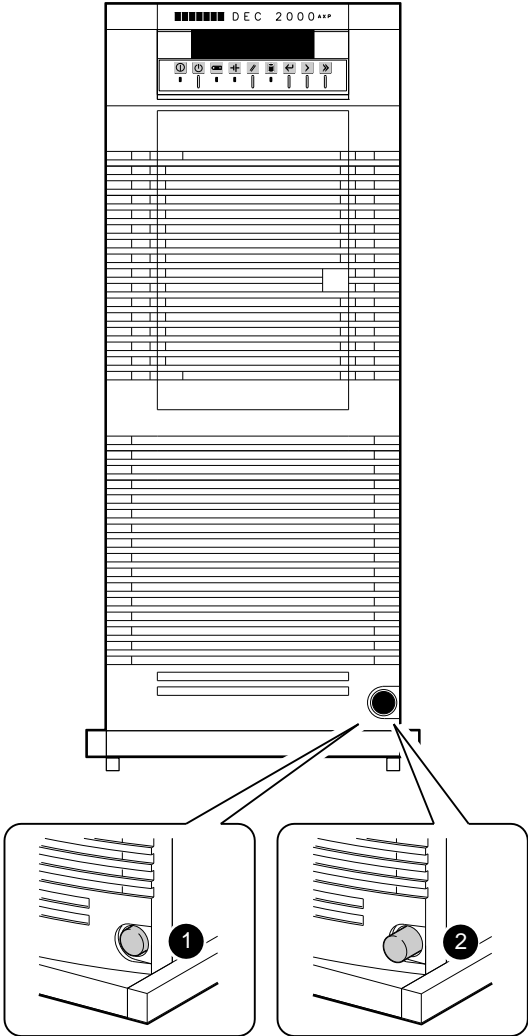
The following table lists the steps that you must follow to turn the system off:

Step	Action
1	Shut down the operating system, following the instructions in the operating system documentation.
2	Set the on/off switch on all peripherals that are connected to the system unit to the off position.
3	Set the on/off switch on the system unit to the off position (2).

Turning the System On or Off

On/Off Switch Positions

The following figure shows the system unit on/off switch in both the on position and the off position:



GA_EN00573A_93A

Normal Power-Up Process

Summary This section describes the normal power-up process that the system follows when you turn it on.

Process The following table lists the stages in the normal system power-up process:

Stage	Action	Result
1	The power supply supplies +5 V to the IFP.	If the power supply is not operating, the IFP display does not light.
2	The IFP checks the state of the fans.	If the fans fail, the IFP displays the FAN FAILURE message and the system enters the standby state. See the <i>Customer Technical Information</i> for information on correcting the error.
3	The IFP runs its power-up tests	If the power-up tests pass, the IFP displays the message CONSOLE PASS. Otherwise, it displays the message CONSOLE FAIL and the system enters the standby state. See the <i>Customer Technical Information</i> for information on correcting the error.
4	The IFP passes a command to the power supply that causes it to supply the +5 V and +12 V voltage levels to the system module.	If the system module and cables are connected and functioning correctly, the system checks the SPS battery voltage. If they are not functioning correctly, the IFP displays the SYSTEM POWER OFF message and the system enters the standby state. See the <i>Customer Technical Information</i> for information on correcting the error.

Normal Power-Up Process

Stage	Action	Result
5	The IFP checks the voltage level on the optional SPS battery.	If the battery voltage is above a minimum level, the system runs the power-up self-tests. If the battery voltage is low, the IFP displays the STANDBY BATT. LOW message and the system enters the standby mode. To continue, press the Run/standby key once and the Speaker key twice.
6	The IFP displays messages indicating any errors that the power-up self-tests detect.	The system also displays the results of these tests on the console terminal or monitor, or on the diagnostic LED display. The following sections describe how to interpret the results of the power-up tests from the console terminal or monitor.

Power-Up Failure

If the IFP display remains blank or displays an error message, or if the system fails to display the power-up tests on the console terminal or monitor, see the *Customer Technical Information* for information on diagnosing the cause of the problem.

Interpreting the Results of the Power-Up Tests

Summary This section describes how to interpret the results of the system power-up tests. It also describes the differences between the OpenVMS and OSF/1 console display and the Windows NT firmware display.

Operating System Differences The following table lists the differences between the OpenVMS and OSF/1 console display and the Windows NT firmware display:

Item	Description	OpenVMS and OSF/1	Windows NT
❶	Memory test	Not canceled by pressing the spacebar.	Canceled by pressing the spacebar.
❷	Test status	Uses the word <i>OK</i> to indicate a passing test and double question marks (??) and an error code to indicate a failing test.	Uses the word <i>passed</i> to indicate a passing test and the word <i>failed</i> and an error code to indicate a failing test.
❸	Failing power-up tests	System displays an error message and halts in the OpenVMS and OSF/1 console.	System displays an error message and a continue prompt. Enter Y in response to the prompt to enter the Windows NT firmware. Enter N to return to the OpenVMS and OSF/1 console to run diagnostic tests.
❹	Passing power-up tests	System enters the OpenVMS and OSF/1 console. Depending on the system settings, it may boot the operating system.	System enters the Windows NT firmware. Depending on the system settings, it may boot the operating system.
❺	Configuration prompt	OSF/1 systems prompt you to run the EISA configuration utility (ECU) using either a prompt (shown) or the Windows NT firmware. You must run the ECU then turn the system off, and on again.	The Windows NT firmware indicates configuration or setup errors that you must correct after the system initializes the firmware. You must follow the instructions displayed.

Interpreting the Results of the Power-Up Tests

Important Information

Note

Booting the operating system after the system fails the power-up tests can result in operating system errors.

Example 1

The following example shows a sample Windows NT power-up test display with a failing test:

```
Copyright (c) 1993 Digital Equipment Corporation.
This 1MB Flash contains VERSION n.n DEC 2000 Model 500 AXP console code.

DEC 2000 Model 500 AXP - Rom Version nn
Digital Equipment Corporation
System conducting power up tests
Press SPACEBAR to abort Memory Test ❶

-----
Testing MEM .... passed 32MB ❶
Testing NVR .... passed
Testing SCC .... passed ❷
Testing IT .... failed 00 0400 ❷
Testing KBD .... passed
Testing LPT .... passed
Testing VGA .... passed
Testing NI .... passed 09-2B-36-0A-12-FF
Testing SCSI .... passed

-----
Power-on self-test errors were detected. Continue NT boot (Y/N)? n ❸
```

Example 2

The following example shows an OSF/1 console power-up test display where all the tests pass:

```
NI      OK 09-2B-36-0A-12-FF
SCSI    OK

-----
System power up OK. ❹
Invoking Eisa Config Utility. Insert System Config floppy. Continue (Y/N)? ❺
```

If the System Fails

If the system fails the power-up tests, Digital recommends that you return to the OpenVMS and OSF/1 console (enter N at the prompt, if necessary), turn off the system and try again. If the power-up tests continue to fail, see the *Customer Technical Information* manual for information on troubleshooting the system, running diagnostics, and contacting your Digital service representative.

Booting Windows NT

Summary

This section describes how to boot the Windows NT operating system from the system disk.

Windows NT Factory Installed Software

The Windows NT operating system, if supplied, is factory-installed on the system disk. Windows NT factory installed software (FIS) saves you time when installing the system, because you do not need to install the operating system.

Booting Windows NT Automatically

When the system is shipped with Windows NT FIS, the system **default** settings cause the system to boot from the system disk automatically after it successfully completes its power-up tests. However, the system counts down for 10 seconds after it displays the Boot menu before booting. You can stop the system from booting before this time-limit expires by choosing another menu item by pressing the up arrow key or down arrow key.

You can change these system default settings if you want. For example, you can cause the system to halt at the Windows NT firmware Boot menu after it completes its power-up tests, or you can increase the count down time-limit.

Boot Selections

The Windows NT firmware uses boot selections to identify the location of the operating system files. When the system is shipped, the default boot selection identifies the system disk as the location of the operating system files. This boot selection causes the system to boot from the system disk. You can set alternative boot selections if, for example, you want to boot the operating system from a different device. See the *Customer Technical Information* manual for information on setting alternative boot selections.

Using the Boot Menu

The following table lists the steps that you must follow to boot Windows NT from the Boot menu:

Step	Action	Result
1	To boot the system using the default boot selection, choose the Boot Windows NT item on the Boot menu and press Return.	The system boots from the system disk, using the default boot selection environment variables .
2	To boot the system using an alternative boot selection, choose the Boot an alternate operating system item on the Boot menu and press Return.	The system displays a list of the alternative boot selection names.
3	Choose the alternative boot selection name that you want to boot and press Return.	The system boots from the boot selection that you choose.

Boot Menu

The following example shows the Windows NT Boot menu:

Boot menu:

```

Boot Windows NT
  Boot an alternate operating system
Run a program
Supplementary menu...
    
```

Use the arrow keys to select, then press Enter.

Boot Selection Menu

The following example shows the Windows NT Boot selection menu:

Boot menu:

```

Boot Windows NT (Default)
  Boot Windows NT 2
    
```

Use the arrow keys to select, then press Enter.

Booting OpenVMS

Summary

This section describes how to boot the OpenVMS operating system from the system disk.

OpenVMS Factory Installed Software

The OpenVMS operating system, if supplied, is factory-installed on the system disk. OpenVMS factory installed software (FIS) saves you time when installing the system, because you do not need to install the operating system. For more information on OpenVMS Factory Installed Software, see the *OpenVMS Factory Installed Software User Information* card.

Booting OpenVMS Automatically

When the system is shipped, the system default settings cause the system to boot from the system disk automatically after it successfully completes its power-up tests. You can change these system default settings if you want. For example, you can cause the system to halt at the console **prompt** after it completes its power-up tests.

System Defaults

The OpenVMS operating system uses default settings to tell the system where the operating system is located and how to boot the system. When the system is shipped, these default settings cause the system to boot from the system disk. You can set different default settings if, for example, you want to boot the operating system from a different device. See the *Customer Technical Information* manual for information on setting different default settings.

Boot Command

Enter the following command to boot the OpenVMS operating system using the system default settings:

```
>>>  
>>> BOOT
```

Booting OSF/1

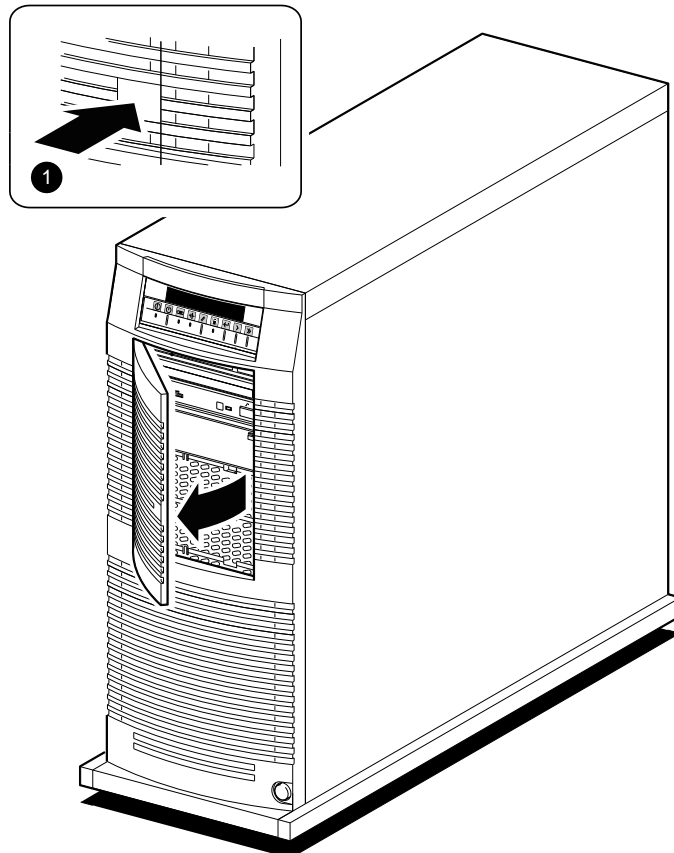
Summary	This section describes how to boot the OSF/1 operating system from the system disk.
OSF/1 Factory Installed Software	The OSF/1 operating system, if supplied, is factory-installed on the system disk. OSF/1 factory installed software (FIS) saves you time when installing the system, because you do not need to install the operating system. For more information on OSF/1 Factory Installed Software, see the <i>DEC OSF/1 AXP Factory Installed Software User Information</i> card.
Booting OSF/1 Automatically	When the system is shipped, the system default settings cause the system to boot from the system disk automatically after it successfully completes its power-up tests. You can change these system default settings if you want. For example, you can cause the system to halt at the console prompt after it completes its power-up tests.
System Defaults	The OSF/1 operating system uses default settings to tell the system where the operating system is located and how to boot the system. When the system is shipped, these default settings cause the system to boot from the system disk. You can set different default settings if, for example, you want to boot the operating system from a different device. See the <i>Customer Technical Information</i> manual for information on setting different default settings.
Boot Command	Enter the following command to boot the OSF/1 operating system using the system default settings: >>> >>> boot

Accessing the Removable Media Devices

Summary This section describes how to access the removable media devices installed in the system, for example, diskette, CD-ROM, and tape drives.

Procedure The removable media devices are located behind the front panel door. To access these devices press and release the indicated area **(1)** on the door.

Illustration The following figure shows how to open the front panel door:



3

Using the IFP

Introduction

This chapter describes the intelligent front panel and explains how to use it.

In This Chapter

This chapter contains the following sections:

- Controls and Indicators
- IFP Display
- Displaying the System Configuration
- Switching the System State
- Halting the System Unit
- Setting the IFP Speaker Volume

Controls and Indicators

Summary This section describes the controls and indicators on the IFP.

Controls The following table lists and briefly explains the functions of the controls on the IFP:

Item	Description	Function
❶	Run/standby key	Switches the system between the run and the standby state when the system is switched on. In the standby state, the power supply supplies power only to the IFP.
❷	Halt key	Halts an OpenVMS or OSF/1 system, returning it to console mode.
❸	Speaker key	Confirms menu choices or exits from a menu. This key is indicated by the SPK or <- symbols on the display.
❹	F1 key	Scans the options of the function chosen using the F2 key.
❺	F2 key	Chooses a function.

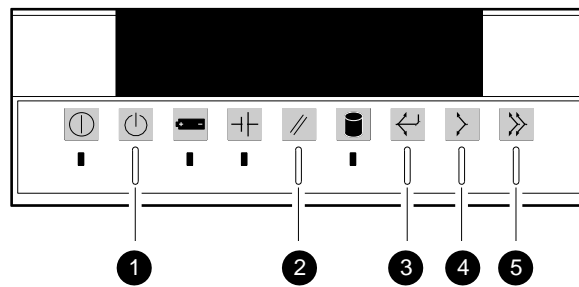
Indicators The following table lists and briefly explains the functions of the indicators on the IFP:

Item	Description	Function
❶	Run/standby LED	A green LED indicates when the IFP is receiving +5 V from the power supply or standby power supply.
❷	SPS active LED	A yellow LED indicates that the system is powered by the standby power supply (SPS).
❸	Battery low LED	A yellow LED indicates that the battery is supplying an insufficient voltage level for the proper operation of the system.
❹	HDU LED	A yellow LED indicates hard disk activity.

Controls and Indicators

Control Locations

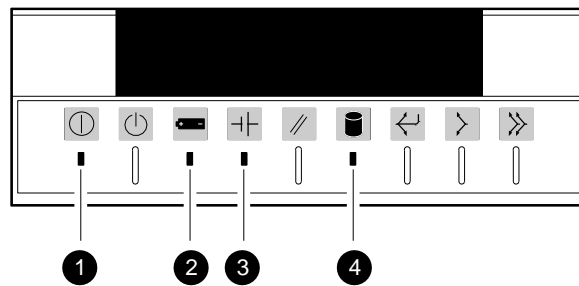
The following figure shows the location of the controls on the IFP:



GA_EN00574A_93A

Indicator Locations

The following figure shows the location of the indicators on the IFP:



GA_EN00606A_93A

IFP Display

Summary

The IFP display consists of two 24-character display lines. This section describes the types of messages that these display lines display.

IFP Display Lines

The following table lists the type of messages displayed by the two IFP display lines:

Line	Message Types
Top line	Displays system messages and the control panel menu. It also displays power-up self-test error codes and some error messages.
Bottom line	Displays system run-time messages, for example: <ul style="list-style-type: none">• Current time• System on/off state• Error messages• System control messages

Displaying the System Configuration

Summary This section describes how to display the system configuration on the IFP.

Procedure The following table lists the steps that you must follow to display the system configuration on the IFP:

Step	Action	Result
1	Press the F2 key twice.	The IFP displays the SYS. CONF. VIEW message.
2	Press the speaker key.	The IFP displays the DISPLAY CONF message.
3	Press the F1 key to display the first and subsequent lines of the system configuration.	The system displays the next line of the system configuration each time you press the F1 key.
4	Press the speaker key when you want to leave the system configuration display.	The IFP displays the messages it displayed before you pressed the F2 key.

System Configuration Information

The following table lists the type of information that the IFP system configuration display shows and some sample values for each type:

Type	Sample Value
CPU type	EV4 PASS 2.X
Speed	6.6 ns EV4
Base Memory	32 MB
FW (firmware) level	7.F

Switching the System State

Summary This section describes how to switch the system state from the run state to the standby state and vice-versa.

Run State The power supply supplies power to the IFP, system module, and other devices installed in the system. The system operates normally only in the run state.

Standby State The power supply supplies power only to the IFP in the standby state. You must switch the system to the run state before you can use it.

Switching to the Standby State The following table lists the steps that you must follow to switch the system from the run state to the standby state:

Step	Action	Result
1	Shut down the operating system, following the instructions in the operating system documentation.	
2	Press and hold the Run/standby key.	The IFP displays the PROGRAM SHUTDOWN? message. The question mark then disappears.
3	When the question mark disappears, release the Run/standby key.	The IFP continues to display the PROGRAM SHUTDOWN message.
4	Press the Run/standby key again, within two seconds, to switch the system to the standby state.	When the system switches to the standby state, the IFP displays the SHUTDOWN - SWITCH RUN /STBY message on the second line. Then it displays the SYSTEM OFF (STANDBY) message.
5	If you failed to press the Run/standby key within the time limit, start the procedure again at step 2.	

Switching the System State

Switching to the Run State

Press and release the Run/standby key to switch the system from the standby state to the run state.

Halting the System Unit

Summary This section describes how to use the IFP to halt the system.

Effects on Windows NT The halt function of the IFP has no effect on the Windows NT operating system or firmware.

Effects on OpenVMS and OSF/1 The halt function of the IFP halts the OpenVMS and OSF/1 operating systems and returns the system to console mode. In console mode, the halt function has the same effect as the HALT command. See the *Customer Technical Information* manual for more information on the HALT command.

Procedure The following table lists the steps that you must follow to use the halt function on the IFP:

Step	Action	Result
1	Press and hold the Halt key.	The IFP displays the SYSTEM HALT? message. The question mark then disappears.
2	When the question mark disappears, release the Halt key.	The system continues to display the SYSTEM HALT message.
3	Press the Halt key again, within two seconds, to halt the system unit.	When the system halts, the IFP displays the THE SYSTEM IS HALTED message. It then displays the SYSTEM ACTIVE message.
4	If you failed to press the Halt key within the time limit, start the procedure again at step 1.	

Setting the IFP Speaker Volume

Summary This section describes how to set the volume of the speaker provided by the IFP.

Important Information

Note

The speaker volume that you specify using the procedure listed in this section is volatile; the system loses that setting when you turn off the system.

Procedure The following table lists the steps that you must follow to set the volume on the IFP speaker:

Step	Action	Result
1	Press the F2 key.	The IFP displays the VOLUME SETUP message.
2	Press the Speaker key.	The IFP displays the volume level submenu.
3	Press the F1 key until the system displays the volume level you require.	There are 7 volume levels, from 0 to 6. Level 0 is silent and level 6 is maximum volume.
4	Press the Speaker key to confirm the selection.	The IFP adjusts the IFP speaker volume, then returns to the SYSTEM ACTIVE message.

4

Using CD-ROM and Diskette Drives

- Introduction** This chapter describes the following CD-ROM and diskette drives:
- RRD42 CD-ROM drive
 - RX26 diskette drive
- Before You Begin** See Chapter 2 for information on accessing the removable media devices.
- In This Chapter** This chapter contains the following sections:
- RRD42 CD-ROM Drive Description
 - Inserting a Compact Disc into a Caddy
 - Inserting a Caddy into the RRD42 CD-ROM Drive
 - Removing a Caddy from the RRD42 CD-ROM Drive
 - RX26 Diskette Drive Description
 - Using the RX26 Diskette Drive
 - Cleaning the RX26 Diskette Drive Heads

RRD42 CD-ROM Drive Description

Summary This section contains general information on the RRD42 CD-ROM drive. It also identifies the controls and indicators on the drive.

Description The RRD42 CD-ROM drive is a read-only device that can read information from 600M-byte compact discs. The compact disc fits into a supplied **caddy**, which you insert into the drive. Compact discs are commonly used to distribute software and online information such as documentation.

Controls and LEDs The following table lists the controls and LEDs on the RRD42 CD-ROM drive:

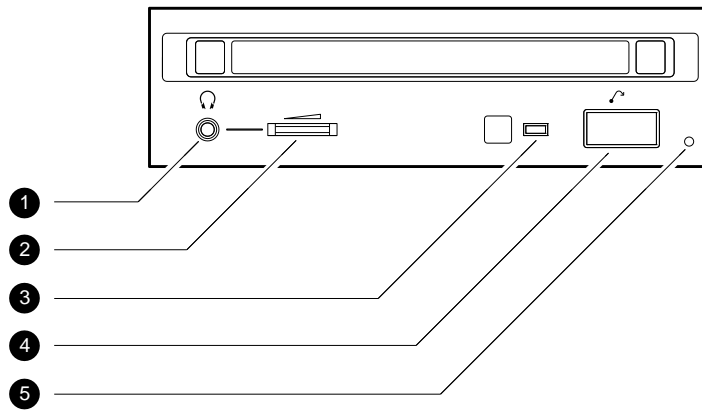
Item	Description
❶	Headphone socket
❷	Volume control
❸	Busy LED (green)
❹	Eject button
❺	Emergency eject hole

If Errors Occur If errors occur while you are using the RRD42 CD-ROM drive, see the *Customer Technical Information* manual for information on troubleshooting.

RRD42 CD-ROM Drive Description

Controls and LEDs Locations

The following figure shows the location of the controls and LEDs on the RRD42 CD-ROM drive:



GA_EN00297A_93A

Inserting a Compact Disc into a Caddy

Summary This section describes how to insert a compact disc into a caddy.

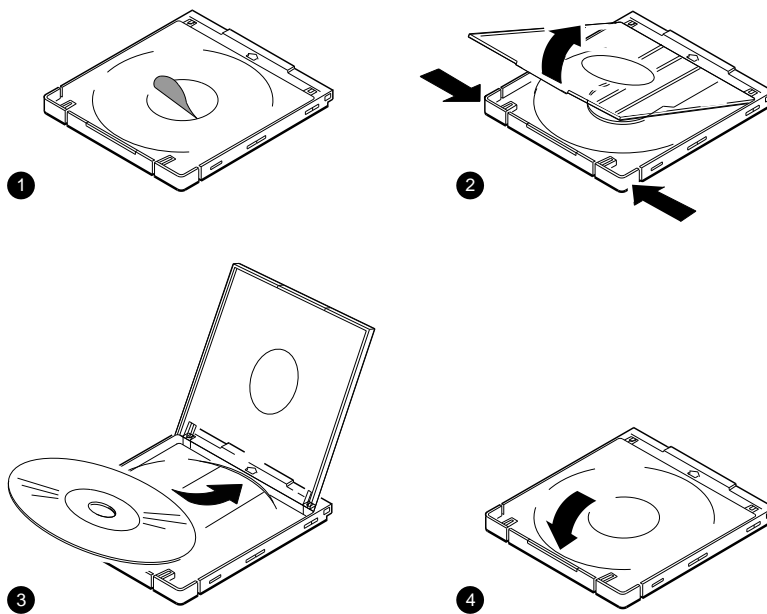
Procedure The following table lists the steps that you must follow to insert a compact disc into a caddy:

Step	Action
1	If necessary, remove the protective film from the center of the caddy lid (❶).
2	Press the tabs on both sides of the caddy and open the lid (❷).
3	Place the compact disc in the caddy with the label facing upwards (❸). Make sure that the compact disc lies flat in the caddy.
4	Close the caddy lid firmly (❹).

Inserting a Compact Disc into a Caddy

Illustration

The following figure shows how to insert a compact disc into a caddy:



GA_EN00298A_93A

Inserting a Caddy into the RRD42 CD-ROM Drive

Summary This section describes how to insert a caddy containing a compact disc into the RRD42 CD-ROM drive.

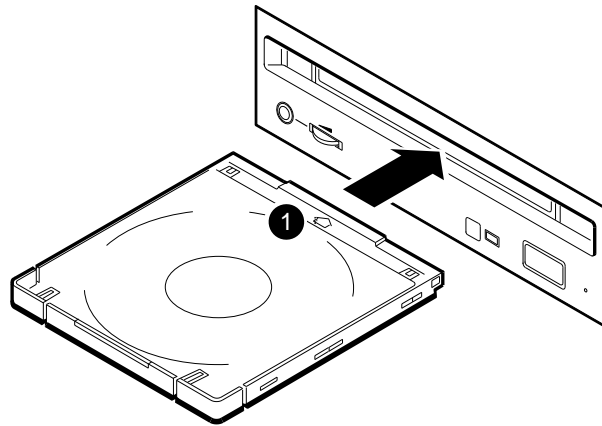
Procedure The following table lists the steps that you must follow to insert a caddy containing a compact disc into an RRD42 CD-ROM drive:

Step	Action	Result
1	Insert the caddy fully into the drive slot with the compact disc label facing upwards and with the arrow on the caddy in the correct position (➊).	The busy LED lights, stays on for a few seconds, and then goes off.
2	When the busy LED goes off, you can send software commands to the RRD42 CD-ROM drive.	

Inserting a Caddy into the RRD42 CD-ROM Drive

Illustration

The following figure shows how to insert a caddy containing a compact disc into the RRD42 CD-ROM drive:



GA_EN00299A_93A

Removing a Caddy from the RRD42 CD-ROM Drive

Summary This section describes how to remove a caddy containing a compact disc from the RRD42 CD-ROM drive.

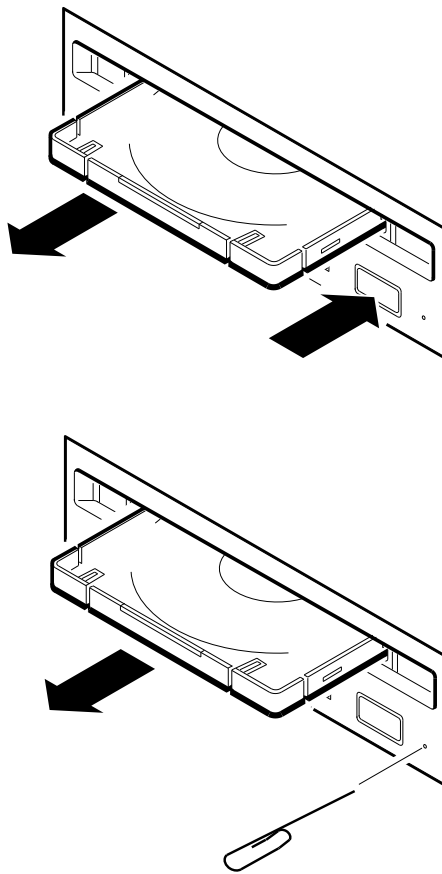
Procedure The following table lists the steps that you must follow to remove a caddy containing a compact disc from an RRD42 CD-ROM drive:

Step	Action	Result
1	Press the eject button on the front of the RRD42 CD-ROM drive.	The caddy emerges from the drive slot.
2	When the caddy emerges, remove it from the drive slot.	If the caddy does not emerge, go to step 3 for further instructions.
3	Shut down the operating system following the instructions listed in the operating system documentation.	
4	Set the on/off switches on all peripherals and on the system unit to the off position.	
5	Insert a straightened large paper clip or metal rod, 1.2 millimeters (mm) in diameter and not less than 35 mm long, into the emergency eject hole and push it in using some force.	The caddy rises in the hole, then emerges from the drive slot.
6	Remove the caddy from the drive slot.	

Removing a Caddy from the RRD42 CD-ROM Drive

Illustration

The following figure shows how to remove a caddy containing a compact disc from the RRD42 CD-ROM drive:



GA_EN00300A_93A

RX26 Diskette Drive Description

Summary This section contains general information on the RX26 diskette drive. It also identifies the controls and indicators on the drive.

Description The RX26 diskette drive is a 3.5-inch device that can read information from, and write information to, 3.5-inch 1.44M-byte high-density (HD) or 2.88M-byte extra-density (ED) diskettes. The RX26 diskette drive can also read information from, but not write to, standard 720-kilobyte diskettes. Diskettes are commonly used to **back up**, exchange, or distribute software or data.

Controls and LEDs The following table lists the controls and LEDs on the RX26 diskette drive:

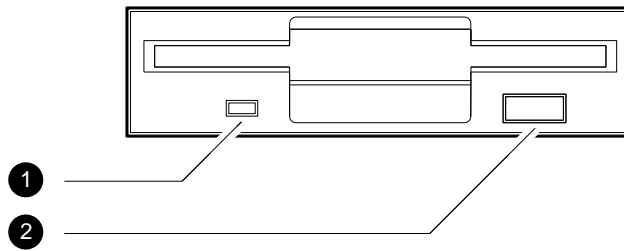
Item	Description
❶	Activity LED (green)
❷	Eject button

If Errors Occur If errors occur while you are using the RX26 diskette drive, see the *Customer Technical Information* manual for information on troubleshooting.

RX26 Diskette Drive Description

Controls and LEDs Locations

The following figure shows the location of the controls and LEDs on the RX26 diskette drive:



GA_EN00301A_93A

Using the RX26 Diskette Drive

Summary

This section describes how to insert diskettes into and remove them from the RX26 diskette drive.

Important Information

Note

Never remove a diskette while the diskette drive is performing a function. While the diskette drive is performing a function, the activity LED either stays on or flashes, depending on the function.

Insertion Procedure

To insert a diskette into the RX26 diskette drive, slide the diskette into the drive. The diskette slides in and drops to its load position.

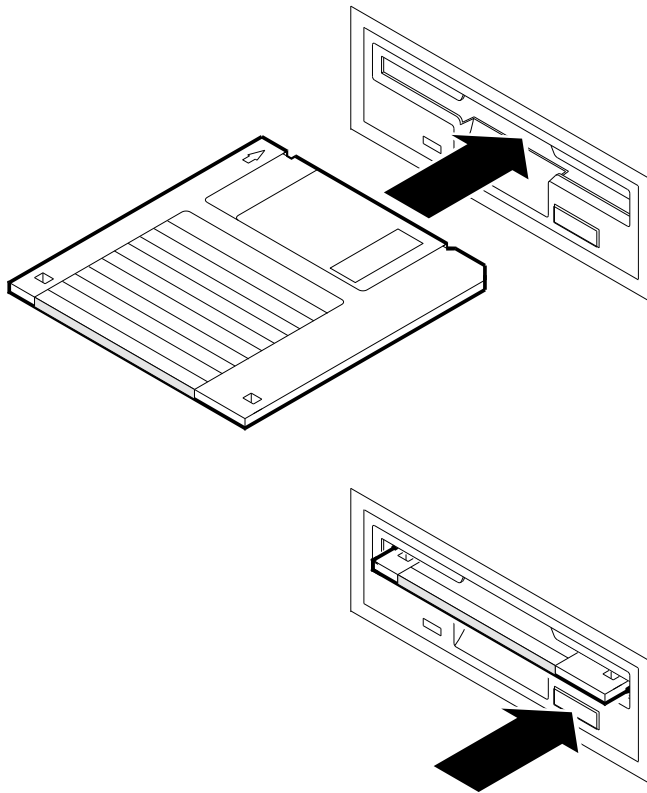
Removal Procedure

To remove a diskette from the RX26 diskette drive, press the eject button on the front of the diskette drive. Remove the diskette when it extends from the diskette slot.

Using the RX26 Diskette Drive

Illustration

The following figure shows how to insert a diskette into and remove it from an RX26 diskette drive:



GA_EN00302A_93A

Cleaning the RX26 Diskette Drive Heads

Summary

This section describes how to clean the RX26 diskette drive **heads**. The heads are the components of the RX26 diskette drive that read **data** from and write data to the diskettes.

Cleaning Procedure

Digital recommends that, when cleaning the heads, you use the RXA3K-HC head cleaning kit and follow the instructions supplied with the kit. You can order the RXA3K-HC head cleaning kit from your Digital sales representative.

When to Clean the Heads

Digital recommends that you clean the heads of the RX26 diskette drive after approximately 8 hours of *use*. Also clean the drive heads if you encounter problems reading or writing data. The following factors affect the cleaning interval:

- Frequency of use
- Quality of the diskette
- Quality of the environment

5

Using Tape Drives

Introduction

This chapter describes the following tape drives:

- TLZ06 cassette tape drive
- TZK1*n* QIC tape drive

Before You Begin

See Chapter 2 for information on accessing the removable media devices.

In This Chapter

This chapter contains the following sections:

- TLZ06 Tape Drive Description
- Using the TLZ06 Tape Drive
- TZK1*n* Tape Drive Description
- Inserting a QIC Tape into a TZK1*n* Tape Drive
- Removing a QIC Tape from a TZK1*n* Tape Drive
- Cleaning the Tape Drive Heads

TLZ06 Tape Drive Description

Summary This section contains general information on the TLZ06 cassette tape drive. It also identifies the controls and indicators on the drive.

Description The TLZ06 is a tape drive that uses cassette tapes. The cassette tapes are industry-standard digital data storage (DDS) digital audio tapes (DATs). It is a helical scan tape drive that uses 4 millimetre (mm) tape. It is commonly used for archival, data storage and retrieval, and data collection purposes.

Controls and LEDs The following table lists the controls and LEDs on the TLZ06 tape drive:

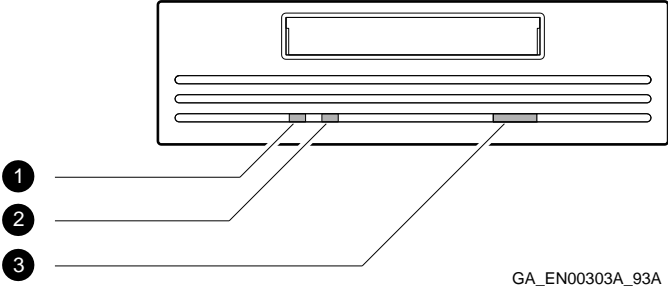
Item	Description
❶	Tape/activity LED (green)
❷	Write-protect LED (orange)
❸	Unload button

If Errors Occur If errors occur while you are using the TLZ06 tape drive, see the *Customer Technical Information* manual for information on troubleshooting.

TLZ06 Tape Drive Description

Controls and LEDs Locations

The following figure shows the location of the controls and LEDs on the TLZ06 tape drive:



GA_EN00303A_93A

Using the TLZ06 Tape Drive

Summary This section describes how to insert a cassette tape into and remove it from the TLZ06 tape drive.

Insertion Procedure Insert the cassette tape until the TLZ06 draws it in. When you insert the tape correctly, the tape/activity LED flashes dimly and then stays on. If both LEDs flash, see the *Customer Technical Information* manual for information on troubleshooting.

Removal Procedure The following table lists the steps that you must follow to manually remove a cassette tape from the TLZ06 tape drive:

Note

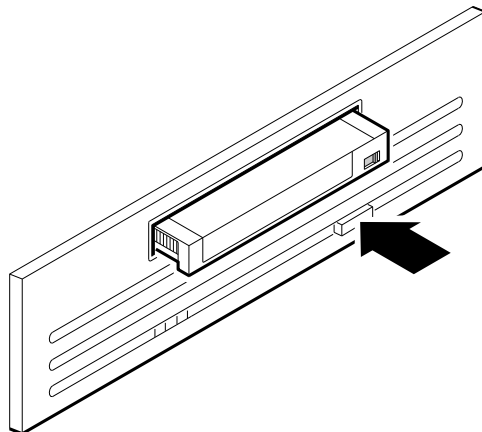
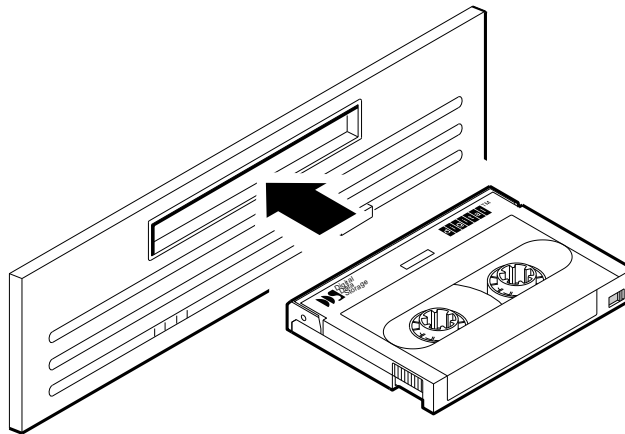
Some operating system applications allow you to eject the cassette tape using software commands or menu items. See your operating system or application documentation for more information.

Step	Action	Result
1	Enter the operating system commands to dismount the cassette tape.	The tape/activity LED flashes and then stays on.
2	When the tape/activity LED stays on, press the unload button.	
3	Remove the cassette tape.	

Using the TLZ06 Tape Drive

Illustration

The following figure shows how to insert a cassette tape into and remove it from a TLZ06 tape drive:



GA_EN00304A_93A

TZK1n Tape Drive Description

Summary This section contains general information on TZK1n tape drives. It also identifies the controls and indicators on these drives.

Description The TZK1n QIC tape drives are quarter-inch cartridge, streaming tape drives. They are commonly used for archival, data storage and retrieval, and data collection purposes.

Controls and LEDs The following table lists the controls and LEDs on a TZK1n tape drive:

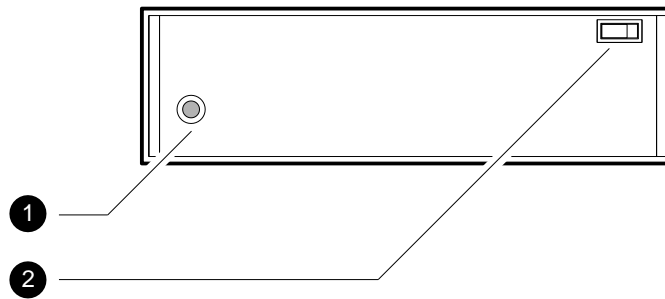
Item	Description
❶	Dual-color LED (amber or green)
❷	Eject button

If Errors Occur If the dual-color LED turns amber or if errors occur while you are using a TZK1n tape drive, see the *Customer Technical Information* manual for information on troubleshooting.

TZK1*n* Tape Drive Description

Controls and LEDs Locations

The following figure shows the location of the controls and LEDs on a TZK1*n* tape drive:



GA_EN00308A_93A

Inserting a QIC Tape into a TZK1*n* Tape Drive

Summary

This section describes how to insert a QIC tape into a TZK1*n* tape drive.

Procedure

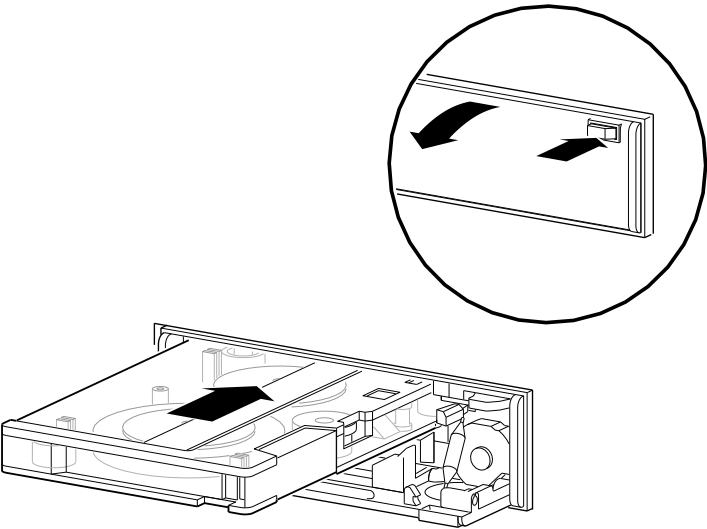
The following table lists the steps that you must follow to insert a QIC tape into a TZK1*n* tape drive:

Step	Action	Result
1	Press the eject button.	The drive door partially opens.
2	Open the drive door fully.	
3	Insert the QIC tape into the TZK1 <i>n</i> until it slides no further.	
4	Close the drive door fully.	The dual-color LED turns green, then flashes green. The TZK1 <i>n</i> makes several whirring sounds, then the sounds stop. The dual-color led stays green. You can now send operating system commands to the TZK1 <i>n</i> tape drive.

Inserting a QIC Tape into a TZK1n Tape Drive

Illustration

The following figure shows how to insert a QIC tape into a TZK1n tape drive:



GA_EN00309A_93A

Removing a QIC Tape from a TZK1*n* Tape Drive

Summary This section describes how to remove a QIC tape from a TZK1*n* tape drive.

Procedure The following table lists the steps that you must follow to remove a QIC tape from a TZK1*n* tape drive:

Note

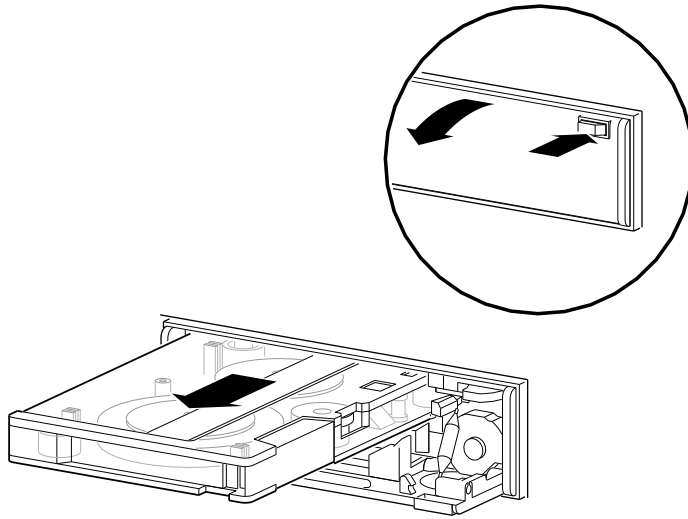
See your operating system or application documentation for information on the software commands that dismount or eject the QIC tape.

Step	Action	Result
1	Enter the operating system commands to dismount or eject the QIC tape.	The TZK1 <i>n</i> makes a whirring sound. The dual-color LED flashes green, then stays green when the whirring sounds stop.
2	Press the eject button.	The drive door partially opens. The dual-color LED turns off.
3	Open the door fully.	The QIC tape partially ejects from the TZK1 <i>n</i> .
4	Remove the QIC tape.	
5	Close the drive door.	

Removing a QIC Tape from a TZK1*n* Tape Drive

Illustration

The following figure shows how to remove a QIC tape from a TZK1*n* tape drive:



GA_EN00310A_93A

Cleaning the Tape Drive Heads

Summary	This section describes how to clean the tape drive heads. The heads are the components of the tape drives that read data from and write data to the different types of tapes.
Cleaning Procedure	<p>Digital recommends that, when cleaning the heads, you use the following cleaning kits:</p> <ul style="list-style-type: none">• Use the TLZ04-HA head cleaning kit (supplied) to clean the heads of the TLZ06 tape drive.• Use the TZK1X-HA head cleaning kit (supplied) to clean the heads of a TZK1<i>n</i> tape drive. <p>To clean the heads, follow the instructions supplied with the cleaning kit.</p>
When to Clean the Heads	<p>Digital recommends that you clean the heads of the TLZ06 tape drive every 2 weeks, or after 50 hours of use. Digital recommends that you clean the heads of a TZK1<i>n</i> tape drive after approximately 8 hours of use. Also clean the drive heads if you encounter problems reading or writing data. The following factors affect the cleaning interval:</p> <ul style="list-style-type: none">• Frequency of use• Quality of the tape• Quality of the environment

6

Removable Storage Media

Introduction

This chapter contains information on the use and storage of the following media types that are used by the optional removable media storage devices:

- QIC tapes
- Cassette tapes
- Diskettes
- Compact discs

In This Chapter

This chapter contains the following sections:

- Quarter-Inch Cartridge (QIC) Tapes
- Cassette Tapes
- Diskettes
- Compact Discs

Quarter-Inch Cartridge (QIC) Tapes

Summary This section describes QIC tapes.

TZK10 Compatibility The TZK10 tape drive is shipped with a DC6525 QIC tape (TZK1X-CC). The following table lists the other QIC tapes that are compatible with the TZK10 tape drive:

Cartridge	Maximum Capacity	Format	R/W	Length
DC6525	525M bytes	QIC-320	R/W	300 m† (1000 ft‡)
DC6320	320M bytes	QIC-320	R/W	189 m (620 ft)
DC6150 DC600XTD	150M bytes	QIC-150	R/W	189 m (620 ft)
DC6150 DC600XTD	120M bytes	QIC-120	R/W	189 m (620 ft)
DC600A	60M bytes	QIC-24	R	173 m (600 ft)

†Metres

‡Feet

TZK11 Compatibility The TZK11 tape drive is shipped with a DC9000-compatible 2.0G-byte QIC tape (TZK1X-CE). The TZK11 tape drive also supports 2.5G-byte DC9000-compatible QIC tapes (TZK1X-CG).

Quarter-Inch Cartridge (QIC) Tapes

Handling and Storing

Use the following guidelines when handling and storing QIC tapes:

- Do not drop or strike the tape.
- If a tape has been exposed to extreme heat or cold, allow it to stabilize at room temperature for the same amount of time as it was exposed, or at most, 24 hours.
- Store the tape where the room temperature is between 10°C and 40°C (50°F and 104°F) and the humidity is between 20% and 80%.
- Do not expose the tape to direct sunlight, abrasive particles, heat, electromagnetic fields, or X-rays.
- Store the QIC tape in its protective container, placed on its edge, or stacked. Do not stack QIC tapes more than five high.
- Place the identification label in the space provided on the top of the QIC tape.

Write-Protecting QIC Tapes

Summary This section describes how to use the write-protect switch on the QIC tape.

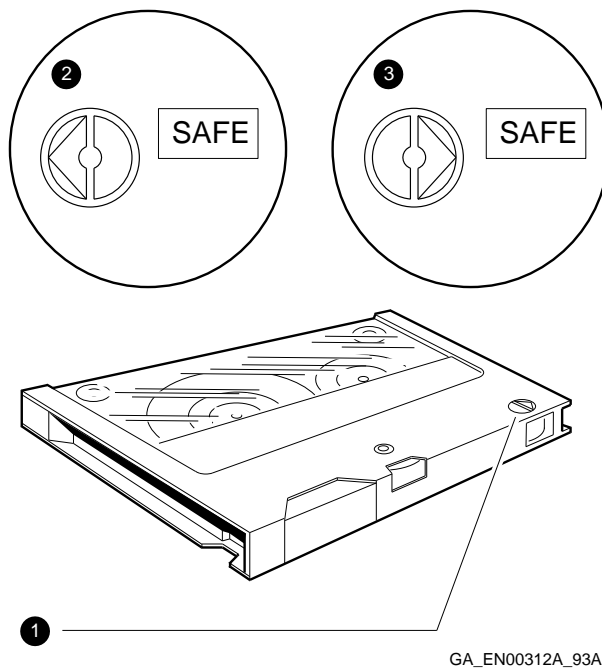
Switch Positions You can write-protect a QIC tape to prevent accidental overwriting or erasure of the data on that tape. Before using a QIC tape, check the position of the write-protect switch (❶). The following table describes the two positions of the write-protect switch:

Position	Description
Write-enable position (❷)	When the switch is in this position, you can write to the tape. The tape is not protected from accidental erasure or overwriting of data.
Write-protect position (❸)	When the switch is in this position, you cannot write to the tape. The tape is protected from accidental erasure or overwriting of data.

Write-Protecting QIC Tapes

Illustration

The following figure shows the two positions of the write-protect switch on a QIC tape:



Cassette Tapes

Summary

This section describes cassette tapes. Cassette tapes are industry-standard digital data storage (DDS) digital audio tapes (DATs).

Compatibility

The TLZ06 cassette tape drive is shipped with a 90-metre (m) TLZ06-CA 4-mm tape. You can also use the TLZ06 with the 60-m TLZ04-CA tape. The following table lists both cassette tapes:

Cassette	Capacity (Gigabytes)	
	Not Compressed	Compressed
TLZ04-CA	1.3	2.6
TLZ06-CA	2.0	4.0

Handling and Storing

Use the following guidelines when handling and storing cassette tapes:

- Do not drop or strike the tape.
- If a tape has been exposed to extreme heat or cold, allow it to stabilize at room temperature for the same amount of time as it was exposed, or at most, 24 hours.
- Store the tape where the room temperature is between 10°C and 40°C (50°F and 104°F) and the humidity is between 20% and 80%.
- Do not expose the tape to direct sunlight, abrasive particles, heat, electromagnetic fields, or X-rays.
- Store the cassette tape in its protective container, placed on its edge, or stacked. Do not stack cassette tapes more than five high.
- Place the identification label in the space provided on the top of the cassette tape.

Write-Protecting Cassette Tapes

Summary This section describes how to use the write-protect switch on the cassette tape.

Important Information

Caution

Do not use a pencil to slide the write-protect switch. Graphite dust can damage the cassette tape.

Switch Positions

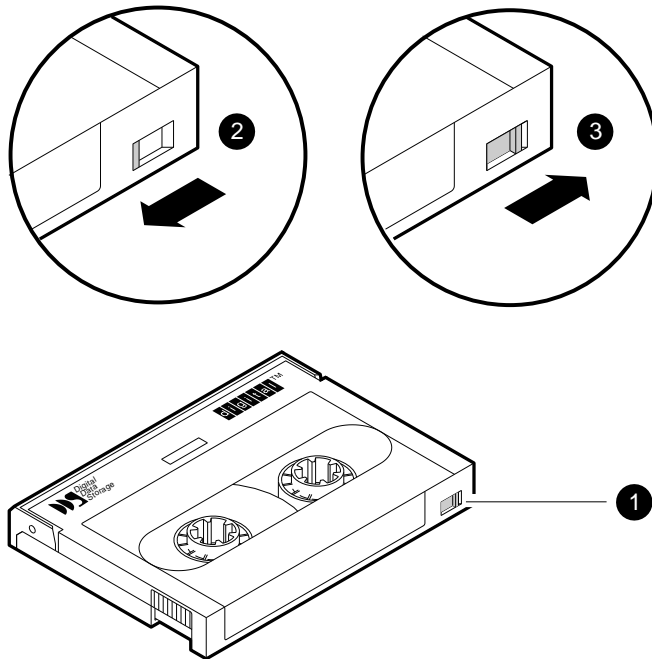
You can write-protect a cassette tape to prevent accidental overwriting or erasure of the data on that tape. Before using a cassette tape, check the position of the write-protect switch (❶). The following table describes the two positions of the write-protect switch:

Position	Description
Write-enable position (❷)	When the switch is in this position, you can write to the tape. The tape is not protected from accidental erasure or overwriting of data.
Write-protect position (❸)	When the switch is in this position, you cannot write to the tape. The tape is protected from accidental erasure or overwriting of data.

Write-Protecting Cassette Tapes

Illustration

The following figure shows the two positions of the write-protect switch on a cassette tape:



GA_EN00313A_93A

Diskettes

Summary This section describes 3.5-inch diskettes.

Compatibility The following table lists the diskettes supported by the RX26 diskette drive:

Diskette	Capacity (Megabytes)	
	Unformatted	Formatted
RZ24K—Double-sided, double density (2DD)	1.0	0.72
RX23K—High density (HD)	2.0	1.44
RX26K—Extra density (ED)	4.0	2.88

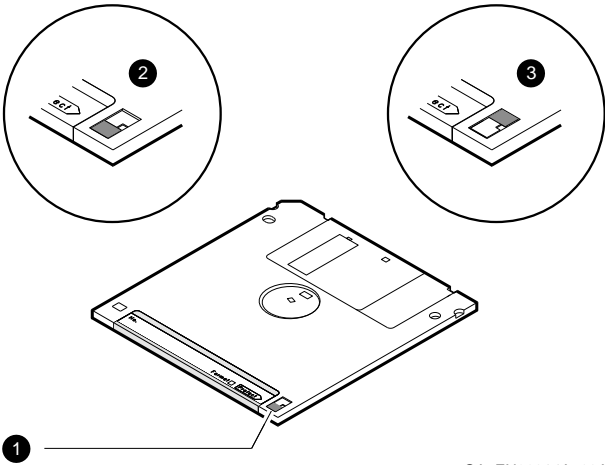
Handling and Storing Keep the diskettes dry, out of extreme temperatures and direct sunlight, and away from devices that contain magnets, such as telephones or monitors.

Write-Protect Switch Positions You can write-protect a diskette to prevent accidental overwriting or erasure of the data on that diskette. Before using a diskette, check the position of the write-protect switch (🔒). The following table describes the two positions of the write-protect switch:

Position	Description
Write-protect position (🔒)	When the switch is in this position, you cannot write to the diskette. The diskette is protected from accidental erasure or overwriting of data.
Write-enable position (🔓)	When the switch is in this position, you can write to the diskette. The diskette is not protected from accidental erasure or overwriting of data.

Illustration

The following figure shows the two positions of the write-protect switch on a 3.5-inch diskette:



GA_EN00314A_93A

Compact Discs

Summary

This section describes how to handle and store compact discs.

Handling and Storing

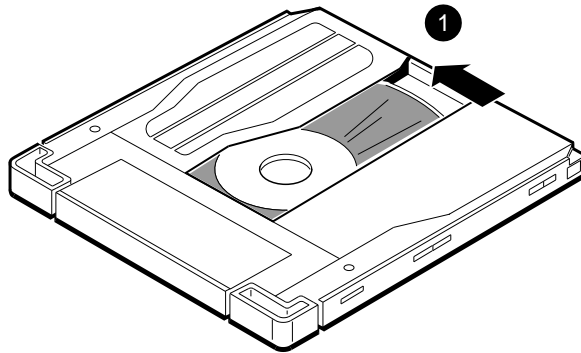
You must take the following precautions when handling compact discs and caddies:

- Do not drop the disc or the caddy.
- The shutter (🔒) on the caddy automatically opens when you insert it into the RRD42. Do not open the shutter manually or touch the compact disc.
- Do not disassemble the caddy; it is precisely adjusted for use with the RRD42.
- Remove the caddy from the RRD42 before moving the system.
- Do not expose the compact disc or caddy to any of the following:
 - High humidity
 - High temperature
 - Excessive dust
 - Direct sunlight
- Hold the compact disc by its edges; never touch the surface.
- Use a proper compact disc cleaner to wipe the compact disc if it gets dirty.

Compact Discs

Illustration

The following figure shows the compact disc, the caddy, and the shutter:



GA_EN00315A_93A

7

Connecting to External Ports

Introduction

This chapter describes the following:

- How to connect peripherals, including the **console terminal**, to the serial port on the system unit
- How to connect a peripheral to the parallel port on the system unit
- How to connect external SCSI devices to an optional SCSI adapter installed in the system unit
- How to connect the system to a network

In This Chapter

This chapter contains the following sections:

- Before You Begin
- Serial Port Terminal Settings
- Connecting a Peripheral to the Serial Port
- Connecting a Peripheral to the Parallel Port
- Connecting External SCSI Devices
- Connecting the System to a Network

Before You Begin

Summary

This section describes information that you must know before you begin connecting external peripheral or network cables to the system unit.

Parallel Port and Serial Port

All standard systems have a serial port¹ and a parallel port. However, if the system is a DEC 2000 Model 500 AXP system with a console terminal attached, the serial port is not available for other types of peripherals.

Terminal Settings

The keyboard and monitor provide the primary interface to the system firmware. However, you can also use a console terminal connected to the serial port. Before you can use the console terminal with the system, you must modify certain display and communications settings on the terminal. See the section entitled Serial Port Terminal Settings for information on the settings that you must modify before you use the system console terminal.

External SCSI and Network Connections

To connect external SCSI devices to the system, or to connect the system to a network, the system must contain an appropriate EISA or ISA option board. Digital recommends that you use only Digital-supported option boards. The following section describes how to get information on and order the option boards that are currently supported.

Other External Connections

You can install other Digital-supported option boards that provide additional serial or modem communications ports. See the documentation supplied with the option for information on connecting cables to these ports. To get information on the option boards that are currently supported or to order these items, you must contact your Digital sales representative.

¹ The system supports two serial ports, but one is internally connected to the IFP and is not available for external connections.

Serial Port Terminal Settings

Summary This section describes the settings that the terminal must have to display the system firmware displays.

Terminal Settings The following table lists the terminal settings and values that allow the terminal to display the system firmware displays:

Terminal Setting	OpenVMS and OSF/1 Console	Windows NT Firmware
Terminal mode	VT nnn -7 bit	VT nnn -8 bit
Transmit speed	9600 baud	9600 baud
Receive speed	receive = transmit	receive = transmit
Character format	7 bits— no parity	8 bits—no parity†
Stop bits	1	1
Comm1 port	DEC-423 (data-leads-only)	DEC-423 (data-leads-only)

†Without this setting, the arrow keys fail to work in the Windows NT firmware.

Important Information When you run the ECU from the OpenVMS and OSF/1 console, the system automatically enters the Windows NT firmware. You must change the character format from 7 bits to 8 bits before using the Windows NT firmware or the ECU. You must reverse the change again before booting the OpenVMS or OSF/1 operating systems.

Connecting a Peripheral to the Serial Port

Summary This section describes how to connect a peripheral that uses a serial port, for example, a terminal.

Procedure The following table lists the steps that you must follow to connect a peripheral to the serial port on the system unit:

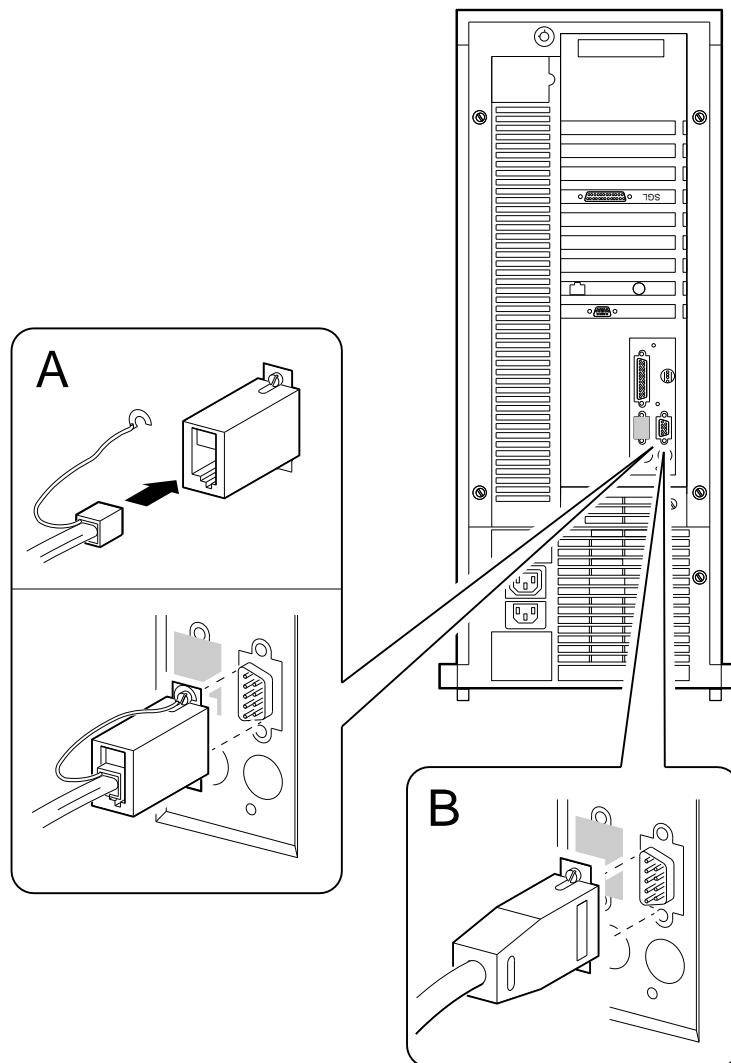
Step	Action
1	Shut down the operating system, following the instructions in the operating system documentation.
2	Set the on/off switch on all peripherals and on the system unit to the off position.
3	Connect the peripheral cable to the system unit using one of the methods shown in Figure 7-1, as follows: <ul style="list-style-type: none">• If the peripheral uses DEC423 DECconnect™ office cable, connect the shielded cable to the H8571-J adapter, then connect the adapter to the serial port (see Figure 7-1, A).• If the peripheral uses a standard shielded serial cable, connect the cable to the serial port (see Figure 7-1, B).
4	If necessary, secure the peripheral cable connector to the serial port by tightening the screws on each side of the connector.
5	Complete the installation of the peripheral, following the instructions in the documentation supplied with the peripheral.
6	Set the on/off switches on all the peripherals and on the system unit to the on position.

Connecting a Peripheral to the Serial Port

Illustration

The following figure shows how to connect a peripheral to the serial port on the system unit:

Figure 7-1 Connecting a Peripheral to the Serial Port



GA_EN00575A_93A

Connecting a Peripheral to the Parallel Port

Summary This section describes how to connect a peripheral that uses the parallel port, for example, a printer.

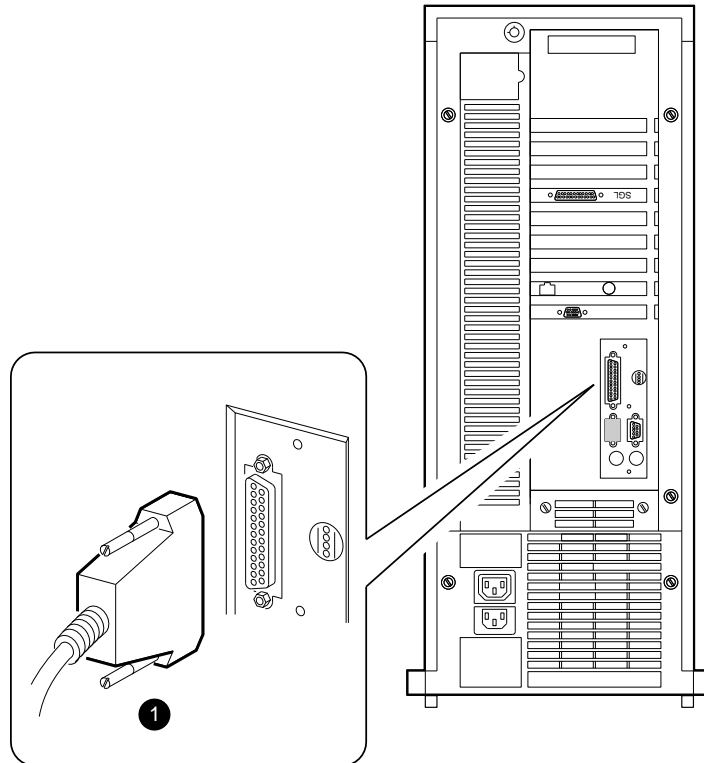
Procedure The following table lists the steps that you must follow to connect a peripheral to the parallel port on the system unit:

Step	Action
1	Shut down the operating system, following the instructions in the operating system documentation.
2	Set the on/off switch on all peripherals and on the system unit to the off position.
3	Connect the peripheral cable (❶) to the system.
4	If necessary, secure the peripheral cable connector to the parallel port by tightening the screws on each side of the connector.
5	Complete the installation of the peripheral, following the instructions in the documentation supplied with the peripheral.
6	Set the on/off switches on all the peripherals and on the system unit to the on position.

Connecting a Peripheral to the Parallel Port

Illustration

The following figure shows how to connect a peripheral to the parallel port on the system unit:



GA_EN00576A_93A

Connecting External SCSI Devices

Summary

This section describes how to determine whether you need to connect external SCSI devices to the system. It also describes the information that you need to order these external SCSI devices from your Digital sales representative.

Deciding on External SCSI Devices

The system unit contains at least one SCSI option board. This SCSI option board enables the system to communicate with up to seven SCSI drives and the PC/AT-standard interface diskette drive installed in the system. If you require more than seven SCSI devices, you must install an additional SCSI option board. The additional SCSI option board provides another SCSI bus. You can connect an additional six internal SCSI devices to this bus, providing a maximum of 13 internal SCSI devices. You can also connect an external SCSI option to the external port on the second SCSI option board.

External SCSI Drive Support

You can install up to four SCSI option boards within the system. Each SCSI option board supports up to seven SCSI devices. Therefore the system supports up to 28 SCSI devices.

The first two SCSI option boards provide support for up to 13 internal devices. If you have less than seven internal SCSI devices connected to either of these SCSI option boards, you can connect external SCSI devices to the external SCSI port on that option.

The third and fourth SCSI option boards each support an additional seven external SCSI devices.

Ordering SCSI Devices, Options, and Accessories

Digital provides a range of external SCSI devices, including disk drives, tape drives, CD-ROM drives, and accessories for these devices. Digital also provides a range of SCSI option boards that allow you to connect these devices externally to the system. To get information on the SCSI devices, options, and accessories that are currently supported or to order these items, you must contact your Digital sales representative.

Connecting External SCSI Devices

Important Information

When ordering external SCSI devices, you must also order the correct cable to connect these devices to the system unit. The external SCSI port on the SCSI option board that you connect the cable to differs depending on the type of option board installed.

Specifying SCSI Cables

Your Digital sales representative can help you to specify the correct cable required to connect the external SCSI devices to the system unit. Before calling your sales representative, make sure that you know the part number and name of the SCSI option board. Your sales representative needs this information to specify the correct cable.

Procedure

See the documentation supplied with the SCSI option board and the documentation supplied with the external SCSI devices for information on connecting these devices.

Connecting the System to a Network

Summary	This section describes how to connect the system to a network. It also describes the information you need to order network option boards from your Digital sales representative.
Network Option Board Support	The system must contain an appropriate network option board before you can connect it to a network. For example, if you want to connect the system to a ThinWire Ethernet network, the network option board installed in the system unit must provide a ThinWire Ethernet port . Other network types may require different network option boards.
Ordering Network Option Boards	Digital recommends that you use only Digital-supported network option boards. To get information on the network option boards that are currently supported or to order these option boards, you must contact your Digital sales representative.
Procedure	See the documentation supplied with the network option board for information on connecting the system to a network.

A

Associated and Related Documents

This appendix lists the associated and related documents. Some of the following documents may not be available in every country. Contact your Digital Sales representative for information on the availability of particular documents.

Associated Documents

The following documents contain information on the DEC 2000 Model 500 AXP system:

- *DEC 2000 Model 500 AXP Installation* (EK-A0674-IN)
- *DEC 2000 Model 500 AXP Customer Technical Information* (EK-A0676-TM)
- *PB22H-KB System Module Hardware Reference Information* (EK-A0638-TD)

Factory Installed Software (FIS) Documentation

The following documents contain information on FIS:

- *OpenVMS Factory Installed Software User Information* (EK-A0377-UG)
- *DEC OSF/1 AXP Factory Installed Software User Information* (EK-SFFIS-UG)

Related Documents

The following documents contain information that is related to the system:

- *TZK10 Cartridge Tape Drive Owner's Guide* (EK-TZK10-OG)
- *TLZ06 Cassette Tape Drive Owner's Manual* (EK-TLZ06-OM)
- *RX26 Diskette Drive Owner's Reference Card* (EK-RX26D-RC)
- *RRD42 Disc Drive Owner's Manual* (EK-RRD42-OM)

Glossary

The glossary defines some of the technical terms used in this manual.

10BASE-T

An IEEE standard 802.3-compliant Ethernet network made of **twisted pair** Ethernet cables. *See also* twisted pair.

802.3

An Institute of Electrical and Electronics Engineers (**IEEE**) standard describing the physical and data link layers of a local area network based on bus topology and Carrier Sense Multiple Access/Collision Detect (CSMA/CD).

ANSI

American National Standards Institute. An organization that develops and publishes standards for the computer industry.

ASCII

American Standard Code for Information Interchange.

back up

To make a **backup** copy.

backup

A copy of data on one media type saved on a similar or different media type. When you make a backup copy, you can recover data after an accidental loss.

bandwidth

Bandwidth is often used to express the rate of data transfer in an I/O **channel**. This usage assumes that a wide bandwidth may contain a high frequency, which can accommodate a high rate of data transfer.

baud rate

The speed at which data is transmitted over a data line. Baud rates are measured in bits per second.

binary

A number system that uses two digits: 0 and 1. They are represented in system circuitry by two voltage levels, and programs are executed in binary form.

bit

Binary digit. The smallest unit of data in a binary notation system, designated as 0 or 1.

boot

Short for bootstrap. Loading an operating system into memory is called booting.

bootstrap

See boot.

bus

A group of signals that consists of many transmission lines or wires. A bus interconnects computer system components to provide communications paths for addresses, data, and control information.

byte

Eight contiguous bits starting on an addressable byte boundary. The bits are numbered right to left, 0 through 7. It is the memory size required to store one **ASCII** character.

cache

See cache memory.

cache memory

A small, high-speed memory placed between slower main memory and the processor. A cache increases effective memory transfer rates and processor speed. It contains copies of data recently used by the processor and fetches several bytes of data from memory in anticipation that the processor will access the next sequential series of bytes. The system contains a backup cache located in discrete circuits on the system module and two on-chip internal caches located in the DECchip 21064 CPU chip.

caddy

The holder for inserting a compact disc into a compact disc drive.

CD-ROM

Compact disc read-only memory. An optical removable media type. It is also called a compact disc.

central processing unit (CPU)

See CPU.

channel

A path along which digital information can flow in a computer.

CISC

Complex instruction set computer. An instruction set consisting of a large number of complex instructions that are managed by microcode. *Contrast with* RISC.

client/server computing

An approach to computing that enables personal computer and workstation users—the *client*—to work cooperatively with software programs and resources stored on another computer—the *server*.

CMOS

Complementary metal-oxide semiconductor. A silicon device formed by a process that combines PMOS and NMOS semiconductor material.

compact disc

See CD-ROM.

console mode

The state in which the system and the console terminal operate under the control of the **console program**.

console program

The code that the CPU executes during console mode.

console terminal

The terminal connected to the console subsystem. The console is used to start the system and direct activities between the computer operator and the computer system.

controller

A system component, usually a printed circuit board, that regulates the operation of one or more peripheral devices.

CPU

The unit of the computer that is responsible for interpreting and executing instructions.

data

A formal representation of information suitable for communication, interpretation, and processing by humans or computers.

DECchip 21064 processor

The **CMOS-4**, Alpha AXP architecture, single-chip processor used on Alpha AXP based computers.

DEC OSF/1 AXP operating system

A general-purpose operating system based on the Open Software Foundation OSF/1 1.0 technology. DEC OSF/1 runs on a range of Alpha AXP systems.

default

A value or setting that in most cases is *normal* or *expected*.

device

The general name for any unit connected to the system that is capable of receiving, storing, or transmitting data.

device name

The name by which a device or controller is identified in the system.

diagnostics

Programs, located in read-only memory, that detect and identify abnormal system hardware operation. *See* ROM.

disk

A flat circular plate with a coating on which data is magnetically stored in concentric circles (tracks). A disk resides permanently inside a disk drive. *See also* diskette.

disk drive

A device that holds a disk. The drive contains mechanical components that spin the disk and move the read/write heads that store and read information on the surface of the disk.

diskette

A flat circular plate with a coating on which data is magnetically stored in concentric circles (tracks). The disk is enclosed in a protective plastic case or envelope. Unlike disks, you can remove a diskette from the diskette drive. *See also* disk.

diskette drive

A device that holds a diskette. The drive contains mechanical components that spin the disk and move the read/write heads that store and read information on the surface of the disk.

EEPROM

Electrically erasable programmable read-only memory. A memory device that can be byte-erased, written to, and read from. *Contrast with* FEPRM.

EISA

Extend Industry Standard Architecture. The EISA bus standard is a 32-bit bus standard and is an extension of the 8-bit or 16-bit ISA bus standard. EISA buses support both EISA and older ISA option boards. *See* ISA.

environment variable

Global data structures that can be accessed from console mode. The setting of these data structures determines how a system powers up, boots operating system software, and operates.

Ethernet

A local area network that was originally developed by Xerox® Corporation and has become the IEEE **802.3** standard LAN. Ethernet LANs use bus topology and are based on Carrier Sense Multiple Access with Collision Detection (CSMA/CD).

Ethernet ports

The connectors through which the Ethernet is connected to the system.

factory installed software (FIS)

See FIS.

fast SCSI

An optional mode of SCSI-2 that allows transmission rates of up to 10M bytes/second. *See also* SCSI.

FEPRM

Flash-erasable programmable read-only memory. FEPRMs can be bank- or bulk-erased. *Contrast with* EEPROM.

FIS

Operating system software that is loaded into a system disk during manufacture. On site, the FIS is bootstrapped in the system, prompting a predefined menu of questions on the final configuration.

firmware

Software that interacts directly with the hardware devices. It is usually located in ROM memory. It serves as an intermediary or transition between the hardware and the higher-level software.

halt

The action of transferring control to the console program.

hard disk

See disk.

head

The part of a fixed disk drive, diskette drive, or tape drive that reads, records, and erases data. Also called read/write head.

IEEE

Institute of Electrical and Electronics Engineers.

ISA

Industry Standard Architecture. A 16-bit bus standard introduced with the IBM® PC/AT system. It is backwards compatible with the 8-bit IBM PC/XT bus. The ISA standard fostered the development of many different types of option cards that were compatible with a wide range of PC systems.

LAN

Local area network. A high-speed communications network that covers a limited geographical area, such as a section of a building, an entire building, or a cluster of buildings. It is a privately owned communications network whose speed is greater than 1M bits/second.

LED

Light-emitting diode. A semiconductor device that glows when supplied with voltage. LEDs are used as indicators on the system unit and on certain devices installed in the system unit.

local area network (LAN)

See LAN.

magnetic tape

A tape that is made of plastic and coated with magnetic oxide. It is used for storing data. Also called magtape.

memory

The area of the system that electrically stores instructions and data, often temporarily.

memory module

A printed circuit board that contains additional memory for the system.

module

A printed circuit board that contains electrical components and electrically conductive pathways between components. A module stores data or memory or controls the functions of a device.

network

A group of individual computer systems that are connected by communications lines to share information and resources.

nonvolatile random-access memory (NVRAM)

See NVRAM.

NVR

The device name that the system uses when testing the NVRAM.
See also NVRAM.

NVRAM

Nonvolatile random-access memory. A memory device that retains information in the absence of power.

operating system

A collection of system programs that control the operation of the system and allow the user to access data files, input/output devices, and applications programs. The operating system software performs such tasks as assigning memory to programs and data, processing requests, and scheduling jobs.

open system

A system that implements sufficient open specifications for interfaces, services, and supporting formats to enable applications software to:

- Be ported across a wide range of systems with minimal changes
- Interoperate with other applications on local and remote systems

- Interact with users in a style that facilitates user portability

OpenVMS AXP operating system

Digital's open version of the VMS operating system, which runs on Alpha AXP machines. *See also* open system.

PALcode

Alpha AXP Privileged Architecture Library code, written to support Alpha AXP processors. PALcode implements architecturally defined behavior.

parallel port

An external port for parallel peripherals and printers. There is one parallel port on the system.

peripheral

A device that provides the CPU with additional memory storage or communications capability. Examples are disk and diskette drives, video terminals, and printers.

port

The name of the socket or connector at the back of the system unit to which a terminal, printer, or other communications devices are connected.

power-up

The sequence of events that starts the flow of electrical current to a system or its components.

prompt

Words or characters that the system displays to indicate that it is waiting for you to enter a command.

RAM

Random access memory. A read/write memory device that can randomly access any location during normal operations. The type of memory that the system uses to store the instructions of programs currently being run. *Compare with* ROM.

random-access memory (RAM)

See RAM.

read-only memory (ROM)

See ROM.

RISC

Reduced instruction set computer. A computer with an instruction set that is reduced in complexity.

ROM

Read-only memory. A memory whose contents cannot be modified during the normal use of the system. The system can use the data contained in a ROM but cannot change it. *Compare with* RAM.

SCSI

Small computer system interface. An **ANSI**-standard interface for connecting disks and other peripheral devices to computer systems. *See also* fast SCSI.

serial port

An external port for serial devices such as terminals and printers. There are two serial ports on the system, one of which is the console serial port.

server

See client/server computing.

SVGA

Super VGA. The SVGA standard provides increased screen resolutions when compared with VGA. The SVGA standard offers screen resolutions of between 640 x 480 using 256 colors and 600 x 800 using 16 colors. Many SVGA graphics adapters offer even higher resolution modes. *See also* VGA.

system

A combination of system hardware, software, and peripheral devices that perform specific processing operations.

system disk

The device on which operating system software resides.

tape drive

A device that contains mechanical components and holds, turns, reads, and writes on magnetic tape.

terminal

An input/output device that lets you communicate with the system. Terminals are divided into two categories: video and hardcopy.

thickwire

An IEEE standard 802.3-compliant Ethernet network made of standard Ethernet cable, as opposed to ThinWire Ethernet cable. Also called standard Ethernet or 10Base-5. *Contrast with ThinWire.*

ThinWire

A Digital trademark used to describe its 10BASE-2 (IEEE standard 802.3 compliant) Ethernet products used for local distribution of data. *Contrast with thickwire.*

twisted pair

A cable made by twisting together two insulated conductors. 10BASE-T Ethernet cables are often called twisted pair Ethernet cables. *See 10BASE-T.*

VGA

Video graphics array. The VGA standard supports both alphanumeric modes and graphics modes. The alphanumeric mode supports 80 characters on between 25 to 50 lines using 16 colors. The graphics mode supports screen resolutions of 320 x 200 using 256 colors or 640 x 480 using 16 colors. The VGA standard is fully compatible with the monochrome display adapter (MDA), color graphics adapter (CGA) and enhanced graphics adapter (EGA) standards. Originally, the VGA standard did not support the Hercules graphics standard, but many VGA compatible option boards can. *See also SVGA.*

write-protect

To protect a disk, diskette, or other storage medium from the addition, revision, or deletion of information.

write-protect switch

The switch that you set on tapes, cartridges, or diskettes to prevent loss of data by accidental overwriting.

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